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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/717,853	11/18/2003	Hua Huang	ARC-P130	9482

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EXAMINER	
LEROUX, ETIENNE PIERRE	
ART UNIT	**PAPER NUMBER**
2161	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/717,853	HUANG, HUA	
	Examiner	Art Unit	
	Etienne P. LeRoux	2161	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 November 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,6,8 and 16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,6,8 and 16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 November 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Claim Status

Claims 1, 2, 6, 8 and 16 are pending; claims 3-5, 7 and 9-15 have been canceled. Claims 1, 2, 6, 8 and 16 are rejected as detailed below.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 2, 6, 8 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Pat No 6,185,569 issued to East et al (hereafter East) in view of Pub No US 2001/0014097 issued to Beck et al (hereafter Beck), as best examiner is able to ascertain.

Claims 1 and 6:

East discloses:

the children node are linked in an order where each child node comprises at least one of a second pointer pointing to a next child node in the order and a third pointer pointing to a previous child node in the order [real-time record of the node label, col 4, lines 32-40, Fig 2, doubly-linked pointers, 250-255, col 2, lines 45-50, Fig 2, right node 230]

East discloses the elements of the claimed invention as noted above but does not disclose a first pointer always pointing to a child node that was last traversed in data access. Beck

discloses a first pointer always pointing to a child node that was last traversed in data access [paragraph 46] It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify East to include a first pointer always pointing to a child node that was last traversed in data access as taught by Beck for the purpose of complying with a round-robin access routine [paragraph 46].

Claims 2 and 8:

The combination of East and Buck discloses the elements of claim 1 as noted above and furthermore, East discloses wherein the parent node further comprises a fourth pointer to a first child node in the order and a fifth pointer to a last child node in the order [Fig 2]

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of East and Beck and further in view of Pub No US 2004/0083209 issued to Shin (hereafter Shin), as best examiner is able to ascertain.

Claim16:

The combination of East and Beck discloses the elements of claim 6 as noted above but does not disclose retrieving another data from the data structure, comprising determining which one of the first, second and the third pointers has the shortest path to said another data, following said one of the first, the second and the third pointers to the children nodes; and traversing at least another one of the children nodes to retrieve said another data and for the parent node, updating the third pointer to point to the last traversed child node in said retrieving another node. Shin discloses retrieving another data from the data structure, comprising determining which one

of the first, second and the third pointers has the shortest path to said another data, following said one of the first, the second and the third pointers to the children nodes; and traversing at least another one of the children nodes to retrieve said another data and for the parent node, updating the third pointer to point to the last traversed child node in said retrieving another node [paragraph 38]. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the above combination of references to include retrieving another data from the data structure, comprising determining which one of the first, second and the third pointers has the shortest path to said another data, following said one of the first, the second and the third pointers to the children nodes; and traversing at least another one of the children nodes to retrieve said another data and for the parent node, updating the third pointer to point to the last traversed child node in said retrieving another node as taught by Shin for the purpose of improving the performance of an XML query [abstract]

Response to Arguments

Applicant's arguments filed 11/26/2006, have been fully considered but they are not persuasive for the following reasons.

Applicant Argues:

Applicant states in the fifth paragraph of page 5:

Beck et al is not related to the problem [with] which the Applicant is concerned. The present application is concerned about improving the efficiency of tree structures for storing data by introducing a new type of pointers that takes advantage of the fact that data requests normally occur in order. Present application, paragraphs [003] and [0018]. On the other hand, Beck et al

is concerned about presenting a cluster of processor nodes as a single processor node without incurring detrimental overhead. Beck et al., paragraphs [0007] to [0010].

Examiner Responds:

Examiner is not persuaded.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., tree structure) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Based on above statement by applicant, for purposes of interpreting the claimed "data structure" it will be assumed that "data structure" is the same as "tree structure." As is well-known and expected in the art, a tree structure comprises a parent node and a plurality of children nodes. In fact, Claim 1 also includes a parent node and a plurality of children nodes. Examiner concludes that the claimed "data structure" can be interpreted as a "tree structure."

It is useful to consider a specialized dictionary, i.e., Microsoft Computer Dictionary, Fifth Edition of "node."

node:

(1) in networking, a device such as a client computer, a server, or a shared printer, that is connected to the network and is capable of communicating with other network devices

(2) in tree structures, a location on the tree that can have links to one or more nodes below it.

One of ordinary skill in the art would recognize the similarity between a network node such as a server and a tree structure node because in both instances nodes store data. Examiner has correctly selected the disclosure of Beck as being pertinent to the invention because Beck discloses network nodes which store data similar to the tree nodes which also store data.

Furthermore, examiner cited the teachings of Beck for the purpose of mapping the claim 1 limitation "a first pointer always pointing to a child node that was last traversed from the parent node in data access." East clearly discloses a tree structure but does not disclose the above claimed pointer. Beck discloses a pointer pointing to a child node that was last traversed [Beck: paragraph 46 discloses a software pointer that points to the last processor node that received a connection, i.e., during the previous execution of the routine]. One of ordinary skill in the art would have been motivated to combine the teachings of East and Beck because they both relate to accessing data stored in a node [Beck: paragraphs 29 and 34, and FIG. 4, a flow diagram that depicts the establishment of a new connection between a source processor node and a destination processor node for the purpose of exchanging data].

MPEP 2164.05(a) states:

In general, the pertinent art should be defined in terms of the problem to be solved rather than in terms of the technology area, industry, trade, etc. for which the invention is used. Examiner concludes that the disclosure by Beck is pertinent prior art because Beck discloses a method for making a cluster of processes appear as a single node to client applications . The cluster is also provided with a means for selecting a processor node to which a connection will be established

[Beck paragraph 11]. The above disclosure agrees with claim 1 which claims a pointer to a child node that was last traversed from the parent node for the purposes of data access.

The following disclosure by the specification provides further evidence that the disclosure by Beck is relevant prior art.

specification of instant application discloses:

paragraph 14:

FIG. 4 is a flowchart of a method 80 for searching a requested node in data structure 50 (FIG. 2) in one embodiment of the invention

paragraph 18:

In most applications, nodes are requested in order (forward or backward). For example, nodes 54-0 to 54-N are requested in order. Thus, **the quickest path to the requested node results from following pointer pCursor of root node 52 to the last requested node, and then following pointer pNext or pPreview to the currently requested node**. In another example, nodes 58-0 to 58-N are requested in order. Thus, the quickest path to the requested node most often results in following pointer pCursor of root node 52 to node 54-2, then following pointer pCursor of node 54-2 to the last requested node, and then following pointer pNext or pPreview to the currently requested node. Thus, the quickest path most often results from following pointers pCursor to the level of the currently requested node, and then following pointer pNext or pPreview to the currently requested node.

Beck discloses:

paragraph 4:

Accordingly, a client accessing the cluster over a network does not need which nodes within the cluster are currently up and running to order to access the software services that the cluster provides.

paragraph 29:

Data packets that are transferred between processor nodes of different clusters are typically associated with a virtual circuit referred to as a connection. A connection is a construct that is established by both the source processor node and the destination processor node for exchanging data via data packets. More specifically, the connection is established by applications running on the source and destination processor nodes. When an application program running on the source processor node requires a service provided by another cluster, it sends a data packet to that cluster's alias address. Such data packets that arrive at cluster 24 include a TCP/IP header portion 30 which contains information regarding an associated connection to a processor node if such connection exists.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Etienne P. LeRoux whose telephone number is (571) 272-4022. The examiner can normally be reached Monday through Friday between 8:00 am and 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Apu Mofiz can be reached on (571) 272-4080. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Etienne LeRoux

7/17/2007

ETIENNE LEROUX
PRIMARY EXAMINER